

# **Attachment B**

## **Scoping for the Petroleum Infrastructure Environmental Performance Report**

### **Introduction**

The purpose of the Petroleum Infrastructure Environmental Performance Report (PIEPR) is to assess the environmental trends of the petroleum infrastructure and to identify environmental and public health concerns regarding continued operation or expansion of petroleum infrastructure in California. The findings and recommendations from the PIEPR will be incorporated in the Energy Commission's 2005 Integrated Energy Policy Report.

The scope of work to be performed for the PIEPR is the subject of the workshop scheduled for December 17, 2004. Staff will ask local, regional and state agencies, public interest groups, and industry representatives to comment on the proposed scope of work and recommend any additional information the Energy Commission should develop to address environmental and public health concerns from petroleum infrastructure facilities.<sup>1</sup>

### **Proposed Scope of Environmental Performance Report**

Staff will examine the environmental trends of petroleum infrastructure development from 1985 to 2003, including: marine terminals, refineries, storage terminals, and pipelines. Staff will also examine potential environmental, and public health and safety concerns regarding future operation and expansion of petroleum infrastructure.

### **Key Questions**

Key questions to be addressed in the PIEPR include:

1. Describe California's petroleum infrastructure from 1985 to 2003.
2. What are the historical trends of environmental, and public health and safety attributes of petroleum infrastructure?
3. What are the environmental, and public health and safety concerns of:
  - a. importing increased quantities of petroleum and refined products through existing or expanded marine terminals;
  - b. transporting increased quantities of petroleum and refined products through existing and expanded pipelines or other delivery systems like rail and tanker trucks;

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<sup>1</sup> In addition to the PIEPR, the Energy Commission in May 2004, adopted an Order Instituting Informational Proceedings (OII; 04-SIT-1) regarding the cause of petroleum infrastructure development constraints. The next steps in that proceeding will likely be workshops in early 2005 to request agencies and public interest groups to identify best permitting practices for petroleum infrastructure projects, and to ascertain how these practices might be employed throughout the state.

- c. storing increased quantities of petroleum and refined products; and
  - d. expanding refining capacity to increase efficiency and throughput?
4. What challenges do environmental concerns present to future development of petroleum infrastructure?
  5. What information do local, regional, and state agencies need to address future environmental concerns from petroleum infrastructure development?
  6. What policy recommendations should be made to ensure that environmental, and public health and safety concerns are addressed?

### ***Description of the Petroleum Industry***

Staff will provide a baseline description of the petroleum industry in 1985. This description will include a discussion of how much crude oil was imported, and by what means it was imported. It will also describe the refined products that were imported, how much was imported, and by what means it was delivered. The baseline description will include where the major infrastructure facilities were located, and the major products and production capacities of California's refineries in 1985. Individual petroleum infrastructure facility data will not be presented. Staff will aggregate data from Northern and Southern California.

Staff also intends to describe the petroleum industry in 2003 and provide an overview of the factors that have led to changes in the industry since 1985 (e.g., economics, environmental regulations, product specifications, and the role of mergers). Staff will also describe how it expects the industry to change in the near and long-term and describe factors that lead us to believe these changes will occur.

### **Environmental Attributes**

Staff's environmental trends assessment will aggregate environmental attributes on a regional basis. For example, air quality emissions from a petroleum infrastructure source category (e.g., refineries, pipelines, storage facilities, or marine terminals) will be aggregated for an air quality basin. Emissions from individual refineries will not be reported, but the aggregated emissions from refineries will be reported for an air basin. Staff will examine impacts from construction, continued operation, and upset conditions from petroleum infrastructure facilities. The environmental attributes that staff intends to address in the PIEPR are described below:

#### ***Air Quality***

Petroleum infrastructure is concentrated primarily in the state's three largest air districts: the South Coast Air Quality Management District (AQMD), the Bay Area AQMD, and the San Joaquin Valley Unified Air Pollution Control District.

Local air quality management districts and air pollution control districts (Districts) have the primary responsibility for enforcing air quality regulations for all stationary sources of air pollution within their jurisdiction. The Districts adopt and enforce rules and

regulations to achieve and maintain state and federal ambient air quality standards in areas affected by emission sources under their jurisdiction and enforce applicable provisions of state and federal law.

Input from U.S. Environmental Protection Agency, Air Resources Board and from the Districts is crucial to staff's analysis. Staff needs feedback from the Districts concerning reporting methods, scope of analysis, and issues that should be addressed in the report.

Staff will assess the contribution of petroleum facilities (refineries, storage terminals, marine terminals, and pipelines) to air basin emissions of criteria pollutants in 1990 and 2003. These include:

1. Sulfur Oxides (SO<sub>x</sub>)
2. Nitrogen Oxides (NO<sub>x</sub>)
3. Reactive Organic Gases (ROGs) and Volatile Organic Gases (VOCs)
4. Particulate Matter less than 2.5 microns (PM<sub>2.5</sub>)
5. Particulate Matter less than 10 microns (PM<sub>10</sub>)
6. Lead
7. Carbon Monoxide (CO)
8. Sulfates
9. Hydrogen (H<sub>2</sub>S)
10. Vinyl chloride
11. Ammonia

Staff will report petroleum infrastructure emissions and compare these to total emissions in an air basin as follows:

1. tons per year
2. tons of criteria pollutant per barrel of crude throughput
3. tons of criteria pollutant per barrel of refined product
4. number and type of air permits, other measures

Staff will also report greenhouse gas emissions, including:

1. Carbon Dioxide (CO<sub>2</sub>)
2. Methane (CH<sub>4</sub>)

Staff will discuss factors affecting future trends, including:

1. Increased importation of refined products via pipelines or marine terminals
2. Increased refinery throughput

3. Criteria air pollutant control measures – Best Available Retrofit Control Technology (BARCT) rules
4. Reformulations of motor fuels to reduce criteria and greenhouse gas emissions

### ***Biological Resources***

Staff will assess:

1. The habitats and sensitive species located near refineries and ongoing operational impacts on the surrounding resources.
2. The miles of refined product pipeline, and how pipelines may affect biological resources from construction and from accidental spills of petroleum and petroleum products. Staff will assess changes in affects on biological resources between 1985-2003.
3. Clean up options for oil spills from a pipeline break, and discuss residual contamination levels after clean up and the potential long-term affects on biological resources.
4. The likelihood that increased imports of petroleum and petroleum products through marine terminals will increase accidental spills and the affect on marine biological resources?
5. Whether regulatory changes that have occurred between 1985 and 2003, and the effect these changes here had on biological resources.
6. The affects of construction, operation and expansion of tank farms and terminals on biological resources.
7. Issues related to expansion of refineries or the construction of new refineries.

### ***Environmental Justice***

Staff plans to describe population changes that have occurred in the vicinity of oil refineries and related infrastructure over the last 20 years, and to identify environmental concerns within these populations related to petroleum infrastructure.

Staff will include:

1. Present demographic data from the 2000 Census to describe the present ethnic and income composition of populations within two miles of refineries and on- and off- shore fuel storage terminals.
2. Present demographic data from the 1980 and 1990 Censuses to identify changes and trends in population and demographic composition over the last 20 years within two miles of refineries and fuel storage terminals.
3. Identify environmental and public policy issues of concern to populations living near refineries and fuel storage terminals.

4. Identify types of interactions that have occurred between petroleum facility owners/operators and the neighboring populations (e.g., community benefits, outreach efforts, community advisories, and community advisory groups).

### ***Safety and Hazardous Materials Management***

Staff will provide a trends analysis of accidental release of hazardous materials from petroleum infrastructure facilities. The primary focus will be on refineries because these are the largest potential source of accidental releases of hazardous materials. Staff intends to use a base year of 1985 and compare the frequency and seriousness of accidental releases to incidents in more recent years (e.g. 2003). Staff will not provide analysis of specific petroleum refineries, but will describe industry trends. The analysis will examine worker injuries and public exposures to accidental releases. Staff will identify the existing databases regarding accidents associated with petroleum infrastructure and determine their usefulness in characterizing public risks associated with California's petroleum infrastructure.

Staff will also assess existing measures used to protect public safety, and identify areas for improvement. Staff will address the following issues in its analysis:

1. How effectively are the public risks associated with hazardous materials being managed by California's petroleum industry?
2. How effective is the existing regulatory framework in controlling the risks associated with handling of hazardous materials in California's petroleum industry?
3. How effective are existing reporting requirements and databases in capturing the California petroleum industry's public safety performance?
4. How does the age and maintenance of California's petroleum infrastructure affect the risk of accidental hazardous materials release and availability of petroleum capacity?

### ***Land Use***

City and county governments prepare Comprehensive Land Use Plans or General Plans spanning approximately twenty years, to determine how to manage the future growth of their communities, which may include petroleum infrastructure facilities. Many local governments are experiencing growth pressure in their communities, including a demand for more affordable housing. As proposed residential developments and related uses such as schools encroach upon existing petroleum infrastructure facilities there is an increasing potential for exposure to accidents, environmental pollutants, and other impacts. Buffer zones can be very helpful, but are not always practical in crowded areas with competing land uses. Energy Commission staff plans to work with local governments and the petroleum industry:

- to identify existing and future land use conflicts; and
- to identify prospects for future expansion proposals in and around existing and proposed communities.

## ***Public Health and Toxic Pollutants***

Districts, the state Air Resources Board, and the state Department of Toxic Substances Control (DTSC) have the primary responsibility for controlling emissions of toxic pollutants (or noncriteria pollutants). Input from the Air Resources Board, Districts, and DTSC regarding reporting methods, scope of analysis, and issues are needed. Staff will report noncriteria emissions for the list of chemicals identified in Assembly Bill 2588 "Air Toxic Hot Spots Act", based on:

7. tons per year
8. tons of noncriteria pollutants per barrel of crude throughput
9. tons of noncriteria pollutants per barrel of refined product

## ***Waste Management and Toxic Site Cleanup***

Staff will provide a trends analysis of hazardous waste production from petroleum infrastructure facilities. The primary focus will be on refineries because these are the largest potential source of hazardous wastes. Staff intends to use a base year of 1985, and compare that to production of wastes in more recent years (e.g. 2003). Staff will not provide analyses of specific petroleum refineries, but will describe industry trends. Staff will report wastes for:

10. DTSC category A wastes – tons per year per SB14 reporting cycle
11. DTSC category B wastes– tons per year per SB14 reporting cycle

Staff will review listings of state/federal contaminated sites on or adjacent to refineries. Staff will also address factors affecting future trends of waste production (e.g., increased importation of refined products via pipelines or marine terminals and increased refinery throughput).

## ***Water Quality and Supply***

Most water is used in petroleum infrastructure facilities for either steam production for refinery processes or is evaporated in cooling systems. The water lost from evaporation in cooling towers is responsible for the majority of consumptive water use in refinery operations, with the process wastewater discharge accounting for the remainder. Topics addressed will include the total amount of fresh water used in refineries, how efficiently it is used, whether recycled water or other alternatives to fresh water are being substituted for fresh water where available, and the impact of this use on other water users.

Nearly all wastewater discharged from refineries results from water use in refinery processes that include desalting, distillation, cracking and reforming operations, with cooling tower blowdown making up the remainder. Approximately a quarter of all refinery Toxic Release Inventory emissions are released in wastewater, which not only provides an indicator of the concerns associated with refinery wastewater discharges, but the need to better characterize such discharges.

Stormwater contamination is a concern. Potential sources of contamination include: refinery chemical leaks and spills; pipeline leaks and spills; marine terminals operations; and storage tanks leaks and spills. While stormwater is typically treated on-site prior to discharge at a wastewater treatment plant, unintentional releases do occur. Such unintentional releases have the potential to contaminate off-site soil, aquatic sediments, surface water, and groundwater, and the issues associated with the movement of contaminants off-site need to be determined.